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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/453,509	12/03/1999	ANTHONY BEVERINA	8594-001-64	2741

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EXAMINER	
BRODA, SAMUEL	
ART UNIT	PAPER NUMBER
2123	13

DATE MAILED: 04/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

PRH

Office Action Summary	Application No.	Applicant(s)	
	09/453,509	BEVERINA ET AL.	
	Examiner	Art Unit	
	Samuel Broda	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 November 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *11* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This communication is in response to Applicants' Response to Non-Responsiveness (the "Response") and accompanying Information Disclosure Statement submitted on 1 November 2001. The Response also includes additional remarks regarding the prior rejection made under Section 112, first paragraph. Claims 1-12 are pending.

Drawings

2. As part of the Response, Applicants submitted formal drawings. These drawings have been reviewed and approved by the Draftsperson.

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.1 Claims 1-4 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over:

(a) Swiatek et al, SAIC Science and Technology Trends II: Crisis Prediction Disaster Management, pp. 1-13 (June 1999)(paper available at:

http://www.saic.com/products/simulation/cats/VUPQPV4R.pdf),

in view of:

(b) Rosen et al, "Influencing Global Situations: A Collaborative Approach", Air Chronicles, 1996 (paper available at:

http://www.inet.saic.com/docs/_docs_/conops.pdf),

and further in view of:

(c) Jablonowski, "When in Doubt, Simulate", Risk Management, Vol. 45 Issue 11, pp. 44-49 (November 1998).

3.2 Regarding claims 1 and 7, Swiatek et al teaches the "Consequences Assessment Tool Set" ("CATS") software that operates on Pentium PCs running Windows and incorporates a "suite of hazard, casualty, and damage estimation modules to estimate and analyze effects due to natural phenomena, such as hurricanes and earthquakes, and technological disasters, such as terrorist incidents, involving weapons of mass destruction, and industrial accidents." Abstract, page 1 paragraph 1.

A personal computer running CATS would include a memory, input device, and processor. The CATS system also includes a "Technological Hazards" software portion that simulates effects due to nuclear, biological, and chemical weapons releases and includes risk calculations based on accessibility and probability. See page 7 column 1 "Technological Hazards"; see also page 8 column 2 paragraph 3 through page 9 column 2 paragraph 1, describing probabilities and accessibilities created during a hypothetical terrorist attack.

More specifically, the CATS software includes software tools to allow "the user to define his or her own weapon in terms of the agent, agent amount, and means of delivery." Page 8

column 2 paragraph 3. In the hypothetical cases of Sarin and anthrax releases, the CATS software determines the accessibility of the site to a weapon/delivery point by determining a threat vector which is most likely the threat vector by which the weapon will be delivered and the likelihood of a successful delivery based on the model. See Figs. 5-7 and accompanying text from page 8 column 2 through page 10, describing both "lethality probabilities" and calculated fatalities where the threat vector is determined with reference to wind conditions, terrain, and population data.

However, the CATS software taught by Swiatek et al does not appear to explicitly teach the calculation of a probability that a terrorist attack will occur. Rosen et al teaches the "Situational Influence Assessment Module" (the "SIAM system") that uses an influence net modeling technique to determine the likelihood or probabilities of events based on a network topology of events. According to Swiatek, the SIAM system "automatically 'rolls-up' the complex, and possibly contradictory, influences to determine the likelihood of the event's occurrence." Page 9 paragraph 5; see also pages 6 through 9 and Fig. 3, illustrating event probabilities associated with events related to Saddam Hussein's invasion of Kuwait.

Additionally, the influence net modeling technique of the SIAM system permits users to alter various inputs to perform a "what-if analysis" on event outcomes, assess relative impacts, and predict possible side effects. See pages 12-18.

However, the SIAM system does not appear to explicitly teach the calculation of a risk based at least partially on the accessibility and probability.

Jablonowski teaches the importance of simulation in making risk management decisions and further teaches the determination of losses or risks based on the product of probability of loss and the loss amount given an accident occurred. See pages 44 and 46, particularly the section entitled "Simulation Fundamentals" for a calculation of expected losses. Jablonowski additionally teaches the use of computers to perform "what-if" scenarios and permit "[v]isualization, the ability to see articulations of random outcomes." Page 46 column 3 paragraph 4.

Regarding claims 1 and 7, it would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to combine the features of the CATS software system with the features of the SIAM system, and calculate a risk using the teaching of Jablonowski, because such a risk calculation using the combined systems would provide an interactive assessment of the risk of a terrorist attack permitting more accurate loss predictions and exploration of alternative scenarios.

3.3 Regarding claims 2-3 and 8-9, determinations made in the CATS system are based on consequence calculations that use plug in modules for various nuclear, biological, and chemical hazards. See page 7 column 1 Section "Technological Hazards".

3.4 Regarding claims 4 and 10, the CATS system produces reports displaying probabilities, accessibilities, and risk.

3.5 Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swiatek et al, in view of Rosen et al, Jablonowski, and further in view of Baker et al, "Access Features - Bomb Blast", March 1998 (web page available at:

http://www.ncsa.uiuc.edu/News/Access/Stories/BombBlast/indexBB.html (the "Intro Web Page"), and

Baker et al, "Visualization of Damaged Structures", March 1998 (web page available at:

http://archive.ncsa.uiuc.edu/Vis/Publications/damage.html (the "Publication")).

Regarding claims 5 and 11, the combination of Swiatek et al, Rosen et al, and Jablonowski does not appear to explicitly teach the display of a three dimensional representation of the most likely threat vector. Baker et al teaches the visualization of structures damaged by terrorist bomb blasts. Intro Web Page at 1.

According to Baker et al, Publication at page 3, "the researchers were particularly interested in seeing the progress of the blast's shock front as it hit and went over the top of the building." Because bomb damage can be asymmetric, the researchers also used the three dimensional aspects of the simulation to position the observation point at various views and examine the propagation of the shock front and the subsequent building response.

Regarding claims 5 and 11, it would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to incorporate the three dimensional blast viewing features of the system of Baker et al with the features of the CATS software system, the SIAM system,

and the teaching of Jablonowski, because such a system would permit the user to better visualize the potential consequences of threat vectors corresponding to explosives placed in buildings.

3.6 Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swiatek et al, in view of Rosen et al, Jablonowski, and further in view of Castillo et al, "Modeling Probabilistic Networks of Discrete and Continuous Variables", Journal of Multivariate Analysis, Vol. 64 Issue 1, pp. 48-65 (January 1998).

Regarding claims 6 and 12, the combination of Swiatek et al, Rosen et al, and Jablonowski does not appear to explicitly teach the use of risk calculations using Bayesian networks. Castillo et al teaches the use of Bayesian networks to model networks of discrete and continuous variables.

According to Castillo et al, use of Bayesian networks with a set of conditional distributions is preferable to specifying a joint probability distribution when the number of nodes is large. See page 49 paragraph 2. Castillo et al illustrates use of a Bayesian network to model the damage assessment of reinforced concrete structures. See pages 50-57. Use of a Bayesian network permits estimation of the uncertainty propagating through the network (see pages 59-62) and permits sensitivity analysis through parameter modification (see pages 63-64).

Regarding claims 6 and 12, it would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to incorporate the Bayesian network modelling techniques of Castillo et al with the features of the CATS software system, the SIAM system, and the teaching

of Jablonowski, because such a system would permit uncertainty propagation estimation and sensitivity analysis.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure. Reference to Fleming, "Assessing Organizational Vulnerability to Acts of Terrorism", S.A.M. Advanced Management Journal, Vol. 63 Issue 4, pp. 27-32 (1998), is cited as teaching a model to assess organizational vulnerability to terrorist acts.

Reference to Doyle et al, "Strategic Directions in Artificial Intelligence", ACM Computing Surveys, Vol. 28 No. 4, pp. 653-670 (December 1996), is cited as teaching the use of robots to learn how to detect and defend against malicious criminal or terrorist attacks. See page 661 column 2 paragraph 2.

5. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Samuel Broda, whose telephone number is (703) 305-1026. The Examiner can normally be reached on Mondays through Fridays from 8:00 AM – 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska, can be reached at (703) 305-9704. The fax phone numbers for this group are:

(703) 746-7238 --- for communications after a Final Rejection has been made;

(703) 746-7239 --- for other official communications; and

(703) 746-7240 --- for non-official or draft communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (703) 305-3900.

Samuel Broda

SAMUEL BRODA, ESQ.
PATENT EXAMINER